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DISEASES OF THE NERVOUS SYSTEM

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

CONTENTS:

ROUTINE ELECTROENCEPHALOGRAPHIC EXAMINATIONS 355
Leslie J. Seeley

STUDIES ON THE PHYSIOLOGY OF AWARENESS 363
John W. Lovett Doust

CHLORPROMAZINE IN THE MANAGEMENT OF THE INSTITUTIONALIZED AGED PSYCHIATRIC PATIENT WITH CHRONIC BRAIN SYNDROME 366
Albert A. Kurland

AN EVALUATION OF THE TREATMENT OF SCHIZOPHRENIA WITH THE ANTIDIURETIC HORMONE OF THE POSTERIOR PITUITARY 369
G. F. Westcott

SHOCK THERAPY CAN BE SAFE 373
Felix A. Ucko

IRONY, INVECTIVE AND SATIRE IN DEVELOPING SOCIAL SKILLS 375
David C. Wilson

BOOK REVIEW 380

INDEX 381

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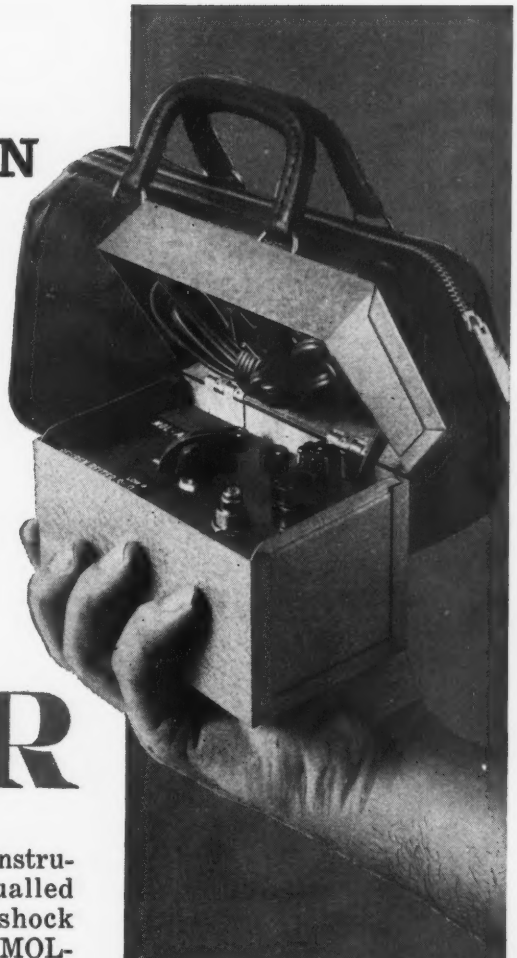

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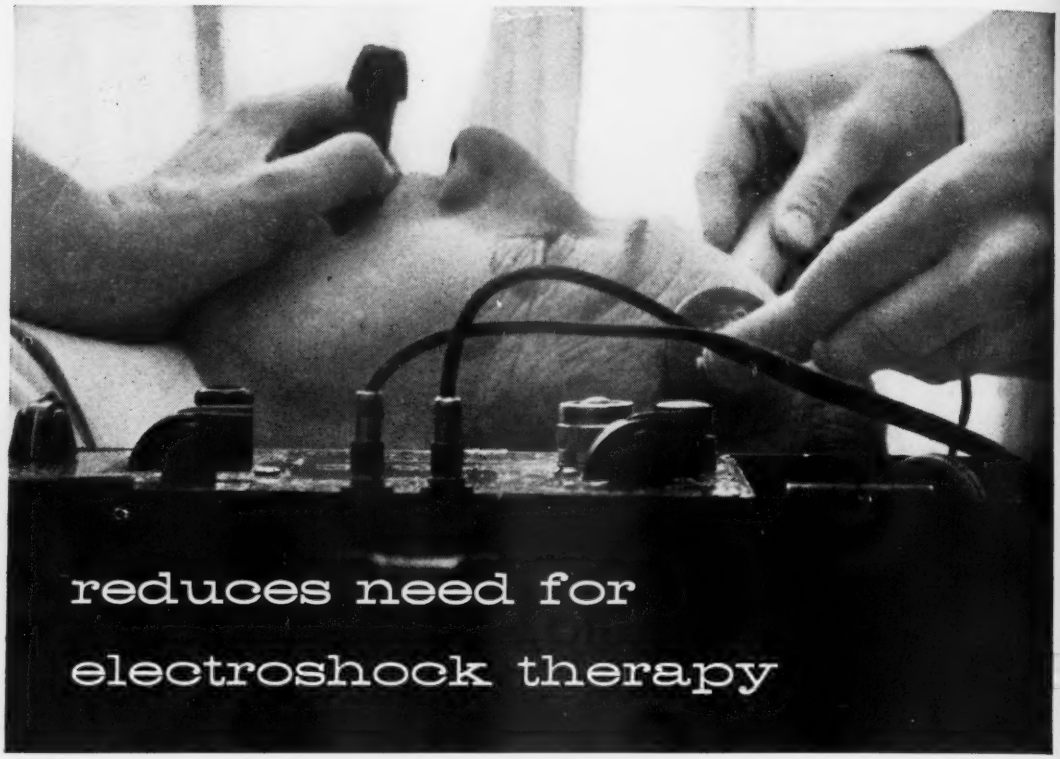

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DISEASES of the NERVOUS SYSTEM

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

Routine Electroencephalographic Examinations

(A Five Year Review)

LESLIE J. SEELEY, M.D.
American Lake, Washington

Introduction

In this paper I propose to discuss the value to the medical and ancillary professions of brain wave recordings in the diagnosis, treatment and prognosis of various disorders.

When this study was begun in 1949, examinations were made only on indicated cases such as epilepsy, brain trauma, space-occupying lesions, and possible psychomotor epilepsies, etc. This plan was soon changed and it became the policy of this hospital to run routine examinations on all newly admitted patients. Later this policy was extended, on the recommendation of the area consultant in EEG with the Chief Medical Director, so that all patients in the hospital have routine EEG studies, insofar as possible.

It is evident that some chronically regressed and acutely psychotic patients could not be examined because of their non-cooperation and resistance. It was also evident that it would be impractical to attempt to record brain wave studies on bedridden patients, unless it were very urgent. To date over sixteen hundred records have been run on more than fifteen hundred patients.

Approximately one-half of the patients examined had been in the hospital sufficiently long to have established diagnoses at the time of their EEG recording. Fifty-four per cent of these were classified as schizophrenic reaction, various types. Nine per cent were diagnosed epilepsy. Thirty-seven per cent were classified as non-psychotic, with diagnoses such as anxiety reaction, psychoneurosis, anti-social reaction, schizoid personality of various types, etc. Many that were classified as possibly epileptic proved to have other conditions. Conversely, many patients that were classified as functional, proved to have organic etiology for their neuropsychiatric disorders. Some of these proved to have clinical epilepsy, space-occupying lesions or brain damage.

Many of the findings of Revitch and Luzzi, in their extensive study of temporal lobe abnormalities, have been corroborated in this study, as were the findings of Kluver and Bucy, Gibbs and Fuster, and others.

EEG is of no prognostic value to electroshock treatment, or electro narcosis therapy, judging by this work, agreeing with the opinion of Simon, Yeager and Bowman. There was no correlation between abnormal pre-EST records, and results from shock. Furthermore, there was no uniformity in benefit from shock relative to the speed of return to normal EEG, post EST.

The work of Gibbs, Gibbs and Lennox in epilepsies indicates that sixteen per cent of known clinical epilepsies have normal records. Their findings parallel those in this review. It is obvious that newer methods of activation should be tried as stated by Bercel and others. Bercel's recommendation for the use of the combination of scopola-

From V.A. Hospital, American Lake, Washington.

mine and alpha chloralose (S.A.C.) in activating normal EEGs of known epileptics will be tried in this clinic.

Method

A six channel, ink-writing unit has been used for the past few years, prior to which a four channel unit was used. Silver electrodes have been attached to the scalp in the hairy areas with collodion, and by scotch tape in the non-hairy areas, using the Gibbs placement method. Ear lobe references were attached by silvered ear rings of the screw type which could be readily replaced. Electrode paste was applied. As many as eighteen electrodes have been utilized. In addition to bi-frontal, bi-parietal, bi-temporal, bi-anterior temporal, bi-occipital, and possibly lower occipital leads, basal leads have been used, where indicated, as suggested by MacLean and Arellano. Tympanic leads have been used in numerous recordings, as recommended by Arellano. About one year ago, it was decided to use not only monopolar leads with one or both ears as reference electrodes (Gibbs Technique), but also the bi-polar or scalp to scalp method, as described by Penfield and Jasper, Hill and Parr, Schwab, and others. By using the so-called monopolar method and the bi-polar method, apparent amplitude asymmetries could be checked and foci could be pinpointed more definitely.

In order to get records, both awake and asleep, most subjects were given seconal, grains one and one-half or more, in the early part of this study. This has been discontinued to a great extent, because of the frequent low voltage fast activity (the so-called beta or gamma rhythm) in the sensory-motor area, induced by barbiturates, as well as random slow activity.

During the latter part of this research, no pre-medication has been used. If a sleep record were indicated, Chloral Hydrate, grains five to grains thirty, in capsules, was used. If a sleep record were absolutely essential in a resistant patient, who would take nothing by mouth, Pentothal Sodium, grams one-fourth to grams one-half, was given intravenously. The Pentothal fast reaction was disregarded for at least ninety seconds. It is planned to use a saline pad electrode placement rubber harness. The leads can be shifted readily and rapidly applied.

Activation has been used in definitely indicated cases, such as suspected convulsive patients, focal abnormalities, suspected space-occupying lesions, psychomotor or temporal lobe focal seizures, and other indicated subjects.

The various methods of activation that have been used in this clinic include hyperventilation, carbon dioxide-oxygen inhalation, and metrazol (five per cent, 10 cc) injected intravenously at the rate of 2 cc per minute in divided doses. Photic stimulation, using the stroboscope, has also been utilized, with or without the addition of metrazol, as described by Cure, Merlis, Henriksen and Grossman, Schwab, Gastaut, Jasper and others. Hyperventilation was used in all patients who were sufficiently in contact to cooperate. The method of counting out loud with each breath, as recommended by Gibbs, is considered unhelpful. This method distracted many patients, in that they stopped breathing to listen to the vocal count. The method used here is the thorough instruction and demonstration by the technician, without counting.

Despite the use of these activating methods, at least fifteen per cent of known epileptics have had normal records. This corresponds to the findings of Gibbs, Gibbs and Lennox. It is planned to use S. A. C. as recommended by Bercel. Metrazol activation in Petit Mal is not being used in this study, since Dr. Gibbs stated in a personal communication to the writer that Metrazol activation was not reliable in Petit Mal. A case in point will be presented later in this paper.

Aim of This Study

1. To differentiate between hysterical, functional and organic illnesses, and to aid, in conjunction with other laboratory methods, in the diagnosis of various disorders.

2. To aid in the diagnosis of several types of epilepsies in the same subject, such as Petit Mal with Grand Mal, so that combined medication can be given, where indicated.

3. To survey all patients in the hospital, insofar as possible, so that unsuspected lesions can be discovered early enough to be treated more hopefully.

4. To assist clinicians in the treatment of neurosyphilis with penicillin as described by Callaway, Lowenbach, Noojin, Kuhn, and Riley, as well as the author.

Results

The overall results of the study of fifteen hundred patients have been gratifying but not surprising. As Gibbs and Gibbs state, eight per cent of normal adults have mildly slow wave recordings, i.e., six to eight cycles per second. Less than one per cent of normal adult controls have the so-called "beta" rhythm, or four to six waves per second. Six and two-tenths per cent of the normal adult subjects have the so-called "theta" rhythm, i.e., fifteen to twenty-two cycles per second. Only four-tenths of one per cent of normal adult controls, have paroxysmal discharges in their recordings. Thus fourteen and two-tenths per cent of the normal adult controls have very slightly abnormal records and only two per cent of normal adults have abnormal records of a moderate degree.

In this work exactly six per cent of those studied had slightly abnormal EEG recordings, with either a mild decrease or a slight increase in the frequency of their waves. The remainder were either moderately or grossly abnormal. It should be noted that many authorities in EEG, consider that the slightly slower frequencies of six to eight per second and the slightly increased frequencies of thirteen to eighteen, to be borderline, and do not classify them as abnormal, or even slightly abnormal. Likewise, amplitude asymmetry, unless checked with both the scalp to ear and the scalp to scalp (monopolar and bi-polar) methods, and unless the differential is at least fifty per cent, is not considered abnormal. In this review, the six per cent classified as slightly abnormal are included in the abnormal summation.

In the First Category (Figs. 1 and 2) there were two hundred and one records classified as abnormal, that were either routine admission examinations or diagnosed as functional, non-organic disorders. The latter included character disorders; inadequate personality, anti-social personality, passive-aggressive personality, schizoid personality, schizophrenic reaction, various types, psychoneurosis, obsessive-compulsive neurosis and mental deficiency. These constituted thirteen per cent of all records run.

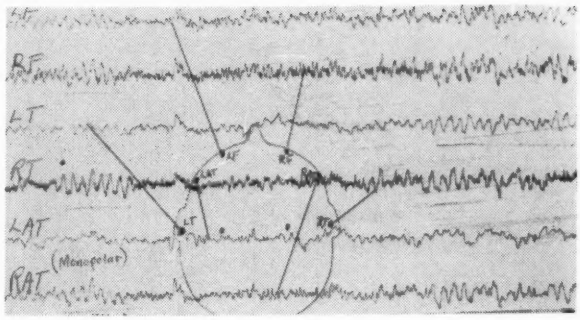


Figure 1. (S.B.) Routine examination. Basic rhythm, 6-8 cyc/sec. Many bursts of high voltage (5-6 cyc/sec.) waves in all leads during wake record. Greatest abnormal slowing in Temporals, Frontals, and Anterior Temporals, more accentuated in right temporal area. Monopolar method, with ears as reference.

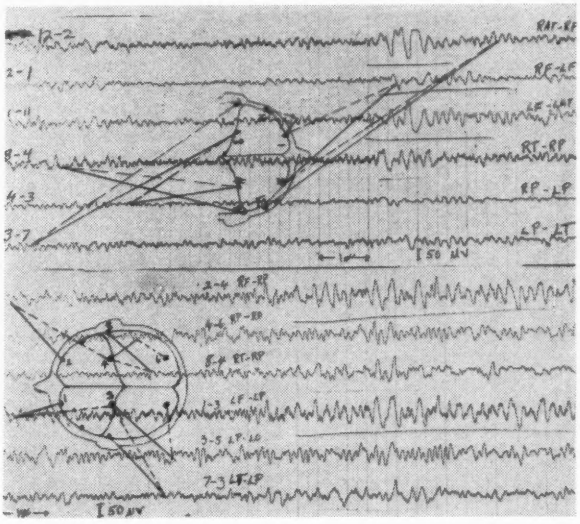
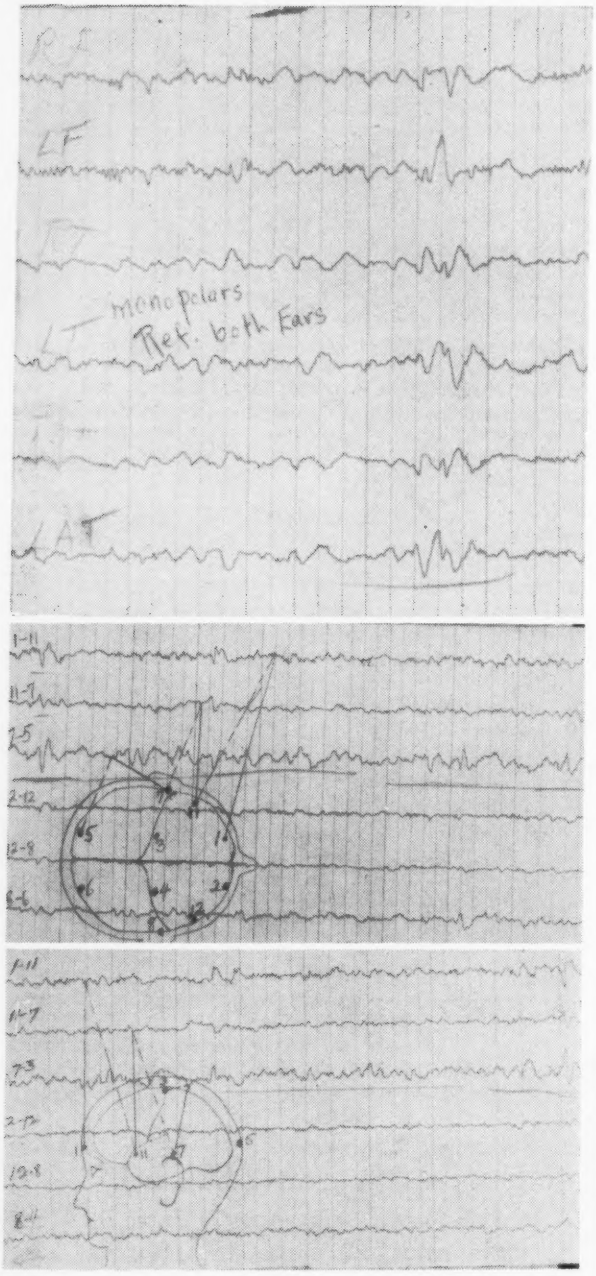


Figure 2. Grossly abnormal paroxysmal EEG with focus (S.B.) bi A.T., bi T. The source is considered to be in diencephalon.

In the Second Category (Figs. 3, 4 and 5) there were 80 cases of abnormal EEG records in previously diagnosed organic brain disorders. This included possible meningo-encephalitis, brain trauma with convulsions, convulsions due to excessive EST, Horner's syndrome, rage reaction, parkinson's disease, pituitary headaches, vertigo, CNS syphilis, organic brain damage, possible traumatic brain disorder, cerebral arteriosclerosis, Meniere's disease, syncope and multiple sclerosis. This was over five per cent of all records run.

In the Third Category (Figs. 6 and 7) Normal EEG in previously diagnosed organic brain disorders; there were sixteen



Figures 3, 4, and 5. Category Two. (CY) 9½/sec. During wake numerous bursts abnormal slow waves (3-4/sec.) of high amplitude in all leads. During sleep, many-phase reversal spikes in Temporal and Anterior Temporals (monopolar method). With bipolar method, the focus is more finely limited to left temporal-left occipital area.

such normal records. This is one per cent of the total examined.

In the Fourth Category; Normal records in suspected or alleged organic brain disorders; there were twenty-three cases or over one per cent of all records run.

In the Fifth Category (Fig. 8) Incomplete or incorrect classifications of epilepsies, there were twenty-one cases. Examples of this class are: Petit Mal Epilepsy instead of Psychomotor Epilepsy; Grand Mal Epilepsy instead of Grand Mal plus Petit Mal Epilepsy, or Grand Mal plus Psychomotor Epilepsy. This amounted to over one per cent of all records run.

Discussion

Five cases will be described in their classification.

Category One. One case is SB, a 58 year old male with the diagnosis Schizophrenic Reaction, catatonic type, with mental deficiency. A routine examination was done which proved to be grossly abnormal, see Figs. 1 and 2.

Category Two. This is a 49 year old male with the diagnosis CNS Syphilis. Both monopolar and bipolar techniques were used in this recording. It is interesting to note that in the monopolar recording the discharges appeared to be rather wide-spread throughout the frontal and anterior temporal area, whereas in the bipolar, the focus was localized more clearly, the focus being in the left temporal, left occipital area, Figs. 3, 4 and 5.

Category Three. This case (M.A.) is that of a young man twenty-one years of age, who was sent to this hospital from Alaska, with a diagnosis "Epilepsy." It is interest-

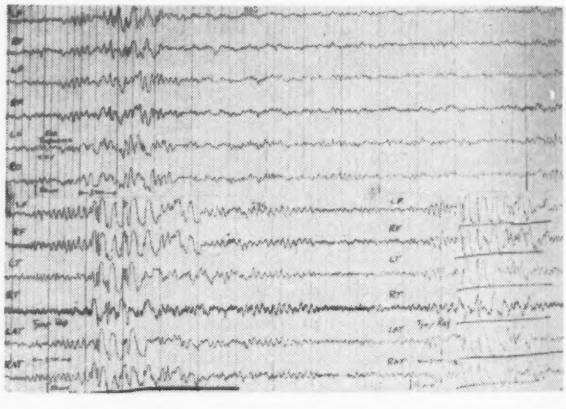


Figure 6. Category Three With Metrazol Activation. Basic rhythm 8/sec. During wake there are bursts of 6-7 cyc/sec waves in all leads. During sleep, nothing remarkable. After 2½ minutes of Metrazol, the first burst of spikes and slow waves and multiple spikes. Following this, there were many such bursts, not regular in rate. He then had a seizure, characterized by spastic extension of arms and turning head to left. There was marked slowing during hyperventilation but no seizure discharges.

Conclusion: Petit Mal variant with Grand Mal Component.

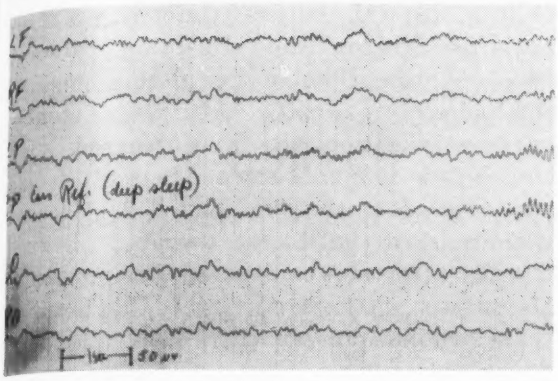


Figure 7. (M.A.) 8 cyc/sec. During long sleep record and long period of hyperventilation, no bursts of spikes or spikes and domes activity. After two minutes of hyperventilation, there was mild slowing (7 cyc/sec).

Conclusion: Normal EEG, awake, asleep, under prolonged hyperventilation and photic stimulation.

ing to note that he grew up in a household with a Grand Mal epileptic, and it was later discovered that he mimicked the Grand Mal seizures that he had observed throughout his childhood. This will be discussed following the description. On admission a wake and sleep record was run. (Fig. 6.) Following sleep he was given metrazol activation by intravenous injection. After two and one-quarter minutes of slow injection (as described previously) he developed a spastic extension of both arms, and then a seizure. The Metrazol was stopped. Immediately following this he had a number of bursts of slowing with bursts of spike and dome discharges in all leads. It was concluded that he had petit mal variant, with grand mal component. This record, with a number of other records, was sent to Dr. Frederic Gibbs for review. In commenting on this record, Dr. Gibbs stated that reports of petit mal epilepsy (any of the three types) following Metrazol activation weren't at all reliable.

This patient was placed on Tridione therapy and was soon allowed to leave the hospital on trial visit. Having a mental age of ten years, he displayed the judgment of a ten year old in his spending habits. He decided to go East to visit his sister, taking all his funds. He found himself separated from his relatives and without money while in St. Louis. He knew that he could get attention and assistance by feigning a seizure, especially in a public place. This he promptly did. He was taken to a hospital where he was identified by his V.A. card then sent to a Veterans' Hospital. He eventually returned to this hospital.

On his readmission to this hospital, he was withdrawn from all anti-convulsive medication for several months. He then had another EEG examination, but without Metrazol activation. He had a wake record, sleep record and hyperventilation, plus photic stimulation, without any abnormal findings, see Figure 7. In view of the unreliability of the first record, during and following Metrazol activation, that record might be considered invalid. There is the possibility, however, that he did recover from Petit Mal (if he had Petit Mal). Some patients recover spontaneously from that type of epilepsy. It is worthy of note that this patient has been free of any type of seizure for the past two years, without medication, and has lived outside the hospital setting.

Category Four. There is no purpose in illustrating normal records.

Category Five. In the fifth category is H.T., Figure 8, a 21 year old male, with the diagnosis of Grand Mal Epilepsy, with psychotic reaction.

This is an interesting and very important recording inasmuch as this patient was treated with Dilantin to control the Grand Mal Epilepsy, but had not been given anything to control his Petit Mal component prior to this first EEG recording. After this recording was run, he was continued with Dilantin to control his Grand Mal (and probably the psychomotor component) but was

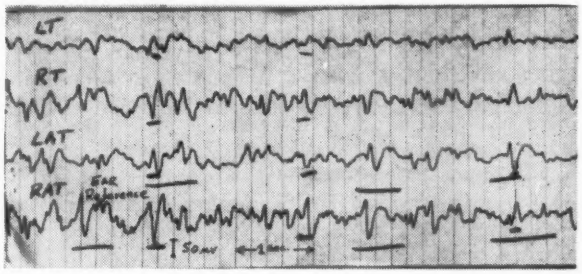


Figure 8. Category Five (H.T.). Scalp to Ear Monopolar method. Four-channel machine. Basic rhythm 11 cyc/sec. Numerous bursts of slow waves in wake record, similar to those found in Grand Mal epilepsy. In sleep, numerous bursts of spikes and domes and multiple spikes, mainly in Right Temporal area. The spikes and slow waves are not regular in rate or rhythm. Much of the spiking is out of phase in the contralateral leads; particularly in the Temporal area. Conclusion: Larval Petit Mal epilepsy with Grand Mal and Psychomotor epilepsy components.

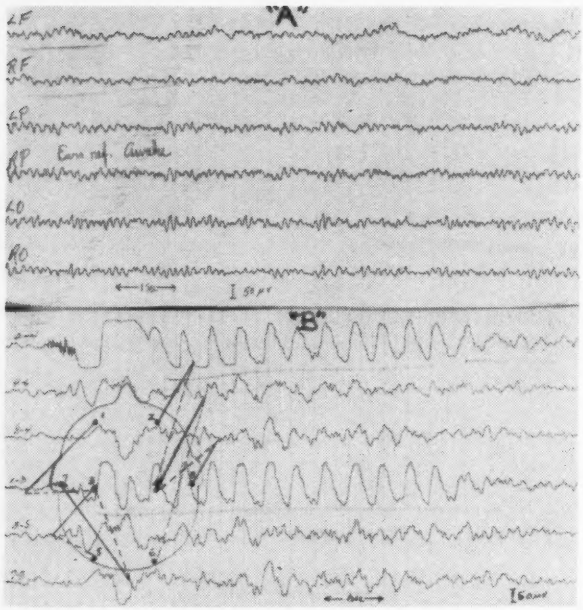


Figure 9a. (C.B.) Basic rhythm 9 cyc/sec. No focus, no seizure activity. No change with hyperventilation except a slight slowing in Frontals.
Conclusion: Normal EEG awake and asleep.

Figure 9b. 17 months after Figure 9a; one day after convulsion. Bipolar and monopolar methods. Basic rhythm 9 cyc/sec. Many bursts of abnormal slow, (1-4½) high amplitude waves, particularly in Frontals, Parietals and Temporals spreading to entire cortex at times. Numerous spikes, generalized.
Conclusion: Grossly abnormal paroxysmal record, fairly generalized altho it appears focal in Frontal, Parietal and Temporal areas.

also given tridione to control the Petit Mal component. In this case, an incomplete diagnosis was made prior to having his first EEG. Before getting Tridione, he was considered stubborn and negativistic. His Grand Mal seizures were fairly well controlled by Dilantin and Phenobarbital. He would wander off and get lost, or when hiking with the group, he would sometimes walk into trees, evidently having Petit Mal seizures.

There was a remarkable change in this patient after being placed on Dilantin plus Tridione. He became friendly, cooperative and compliant. He was transferred to a privileged ward, where he remained. He didn't have his lapses of attention or aggression that had been characteristic prior to Tridione therapy. This demonstrates the need for complete diagnosis in order to facilitate adequate treatment.

The final case to be discussed does not fit in any category, but is of interest because of the clinical considerations. This forty-nine year old woman (C.D.) was admitted to this hospital the first time with a diagnosis of Schizophrenic Reaction, paranoid type. At the time of her first admission, she had a normal EEG. After some months of hospitalization she was released. She contracted Pneumococcus Meningitis, and was treated at the Portland V.A. Hospital with massive antibiotic therapy. Several months after she contracted Pneumococcus Meningitis, she was returned to this hospital.

On readmission another EEG was done, which was normal (Fig. 9A). Over seventeen months later, she had a Grand Mal epileptic seizure. An EEG was done the next day, which was grossly abnormal (Fig. 9B). She was placed on anticonvulsant medication, with some improvement.

The interesting clinical finding is that immediately following her recovery from the acute stage of pneumococcus meningitis, her record was entirely normal. Seventeen months later, she had the convulsion and marked evidence of fairly generalized brain damage, with paroxysmal slowing. Several of the clinicians consider that there was a possibility of adhesions or vascular changes, producing evidence of delayed cortical damage.

It is also interesting to note that her last EEG (not illustrated) shows diminished abnormality as compared to previous one. This patient has been discharged from the hospital and is very much improved.

It is hoped that EEG will be recognized as a helpful adjunct to other laboratory methods in the diagnosis and treatment of disease. It is also hoped that more use will be made of this valuable diagnostic aid. There is no doubt that more activating agents should be employed, such as S.A.C., (Scopolamine plus Alpha Chloralose).

Many of the findings of Revitch and Luzzi in their study of the same number of patients, have been corroborated in this hospital, although the survey at this hospital was not limited to temporal lobe abnormalities. The work of Perl, Galambos, and Glorig can be useful to the otolaryngologist, and psychiatrist in detecting hysterical deafness as differentiated from organic deafness. The work of Kirchbaum and Stehle points to the possibility of aid to internists in differentiating peptic ulcer from functional gastric dis-

order. Carotid sinus massage, and internal Carotid artery pressure, for the diagnosis of cerebral vascular occlusion, as described by Skillicorn and Aird, have been used in this study and will be used more frequently in the future.

Lennox points out the importance of the heredity factor in epilepsy which is of value to the psycho-therapist and family counsellor. The value of EEG Examinations cannot be overestimated. The general practitioner or internist will be interested in the work of Van Buskirk in the EEG prognosis for vascular hemiplegia rehabilitation.

EEG examination should be of interest to any professional people engaged in the examination, treatment or supervision of children with behavior abnormalities, functional abdominal complaints, rage reactions, apparent incorrigibility, paranoid tendencies, apparent childhood schizophrenia, and other similar features. The importance of EEG examinations in these children has been described by Robertiello, Lennox, Gibbs, and Wimans. These studies should be of interest to psychiatrists, neurologists, psychologists, internists, general practitioners, social workers, welfare workers, family counsellors, and others. Many of the children studied had temporal lobe foci.

Summary

Routine EEG examinations are being done on all patients in this hospital, insofar as possible. Fifteen hundred patients have been examined in the past five years and over sixteen hundred recordings have been made. Over thirteen per cent of all patients examined had abnormal EEGs in routine examinations or nonorganic functional disorders. Over five per cent had abnormal EEGs in previously diagnosed organic brain disorders. One per cent had normal EEGs in suspected or alleged organic brain disease. Over one per cent were found to have incorrect or incomplete diagnosis of epilepsy.

The study here corroborates the work of Shuster, Brownstein, Pacella, and Isbell on the EEG abnormalities following abrupt withdrawal from barbiturates. One patient classified as Grand Mal epilepsy, improved when a complete diagnosis was made (Grand Mal plus Petit Mal epilepsy) and being placed on Dilantin with Tridione therapy. One case considered entirely functional was described in this article as having a markedly abnormal EEG record.

It is not the belief of the writer that physical examinations, neurological examinations, observations, and other laboratory examinations, as well as detailed history taking, can be overlooked in preference to any laboratory method. However, there is no doubt that EEG examinations, in indicated cases, are of great help in determining the existence of brain abnormalities or changes in brain metabolism, circulation, and Oxygen-CO_2 balance.

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Studies on the Physiology of Awareness

(Consciousness of the Duration of Time in Psychiatric Patients)

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The analysis of consciousness into a number of parameters of awareness has not only clarified the semantic understanding[12] of this basic concept of psychology and psychiatry but has led to the search for psychophysiologic procedures which tend to change in parallel fashion to each of the several dimensions of consciousness that have been distinguished.[8] Such an experimental design, when validated by suitably chosen monitoring techniques, amounts in effect to the measurement of that parameter of awareness selected for investigation. Essays on the quantification of Attentive awareness,[5] Emotional (visceral) awareness,[9] Cogitive awareness,[10] and Discriminatory awareness,[7] have already been made. This present study reports an attempt to measure another fundamental aspect of consciousness: appreciation of the passage of time, or the temporal parameter of awareness, and to investigate its dysplasia in a number of psychiatric disorders.

Procedure

A population of 538 subjects was tested. It included a normal sample of 347 *healthy controls* of whom 99 were English males (mainly British Army other ranks but including a few professional colleagues), 94 were male undergraduates and 154 were female undergraduates of a Canadian University. For comparison with this healthy population, two abnormal samples were available; one of these was a group of 118 psychiatric patients consisting of 48 *neurotics*, 31 *depressives*, 9 *epileptics*, 55 *schizophrenics* and 4 *organic reaction* types; the other was a small group of 44 parapsychiatric subjects consisting of 8 patients complaining of periodic attacks of severe *migraine* and 36 delinquents, examined while under jail sentences, and selected because each had been psychiatrically diagnosd as a *psychopathic personality*. Apart from these psychopaths who were all males, the abnormal groups contained an almost equal proportion of the two sexes. The age range of all groups lay between 17 and 48 years and the mean ages of members of each group did not differ too much from one another (*v. inf.*)

The test procedure involved setting the individual subjects a simple task and then getting them to estimate the time they had taken to do it. In practice, each subject was requested to tap with a pencil on a piece of quarto-sized paper as quickly as he was able, the investigator commanding him to stop after the tapping had endured for exactly a 15-second period. The request to estimate the duration followed immediately upon completion of the tapping. The subject received no prior warning that a time estimate would be required of him.

Results

Table 1 indicates that the massed healthy control group tended to overestimate the 15-sec. period by some 7 seconds. It shows also however that this slight deviation was small by comparison with the patients' estimates. Apart from the migrainous patients for whom time seemed to pass more quickly, all the severely psychiatrically abnormal groups consistently estimated the 15-second duration as longer than did the controls. There was no disturbance in mean time consciousness among the neurotics. The heteroge-

TABLE 1

Consciousness of Duration Is Significantly Changed in Psychiatric Illness

Group	N	Mean estimate of duration (secs.)	s	Analysis of Variance
Healthy Controls	347	22.409	19.004	
Migraine	8	13.375	10.415	
Neurosis	48	22.208	14.802	F ratio=5.600
Psychopathy	36	34.833	43.684	df 6 and 527
Depression	31	39.613	31.405	P<.001
Epilepsy	9	39.444	52.145	
Schizophrenia	55	41.036	59.465	

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neity of psychopaths, epileptics and psychotics in regard to temporal awareness is obvious in the Table from the large standard deviations attending the means.

Individual estimates among certain of the psychotic patients were occasionally grotesque, although there was no reason to doubt the sincerity of the patient. For two schizophrenic patients for example, the 15 second period seemed to endure for "half-a-day." Needless to say such extreme estimates were not recorded in our results. Also not included in Table 1 are the results from the 4 organic reaction type patients. These patients were all pre-senile dements of either the Pick or Alzheimer type. The mean estimate of these organics was 95.0 secs (s= 84.409) and hence in accordance with expectation.[3]

Table 2 displays a further aspect of the data. If estimates of 5 secs. on either side of the actual 15 sec. duration are accepted as "ideal" temporal orientation, then it can be seen that, even though the neurotics did not differ from the control group in regard to their mean scores, they do show the same shift to the right as is evidenced by the psychotics.

TABLE 2

Time Becomes Relatively "Empty" in Neurotic and Psychotic Breakdown

Group	Percentage Incidence of Estimates of Duration			
	1-9 secs.	10-20 secs.	21-30 secs.	31 secs. and up
Healthy Controls	19.0	60.0	18.0	13.0
Migraine	37.5	37.5	25.0	0
Neurosis	22.2	24.4	40.0	13.3
Psychopathy	21.1	23.7	26.3	23.7
Epilepsy	11.1	44.4	22.2	22.2
Depression	13.0	19.3	29.0	38.7
Schizophrenia	12.7	22.0	31.8	34.5

Table 3 shows the results of screening the findings for possible interfering variables. Sex for sex, no significance can, it would seem, be attached to the fact that part of the control sample was English and part Canadian, and that the former were Army conscripts drawn from a very wide variety of civilian trades and professions, while the latter were University undergraduates of the faculties principally of arts, science and laws. As the Table indicates, the entire difference between these two control populations is due

TABLE 3

Sex is a significant variable in Temporal Awareness

Group	N	Mean estimate of duration (secs.)	s	Test of Significance
Culture, etc.				
Canadian males	94	20.021	13.745	$t<1.0$
English males	99	20.222	16.245	P is N.S.
Canadian total	248	23.282	19.933	$t=3.00$
English total	99	20.222	16.245	$P=.01$
Sex				
Canadian males	94	20.021	13.745	$t=4.167$
Canadian females	154	25.273	22.672	$P<.001$

to sex, the female sample estimating the 15 seconds by a significantly greater 5 seconds than the males. The finding underlined the importance of keeping the sex ratio at approximately unity for the investigation of our psychiatrically abnormal groups.

The final possible variable studied was that of age. The scores of the entire control group together with those of the neurotics (since their mean did not differ from the controls) were cross correlated with age. A Pearson product moment correlation coefficient was computed and found to be statistically insignificant ($r=+.088$) within the range of age (17-48 years) investigated.

Discussion

Enquiry into a psychiatric patient's orientation for time and space is an integral part of any mental state examination, yet only the grossest examples of temporal disorientation can be picked up by the usual questions asked; often the sole disturbances elicited are those in organic reaction types and this finding has been used clinically as a sign positive for such illnesses. *Per contra*, other writers have considered the psychopathological aetiology of certain functional illnesses (e.g. of psychopathic personality; the "psychopathic inferior") to be grounded in a disturbance of the concept of time, the inability to think or plan ahead of the present being a principal characteristic of the personality of such patients.

Essentially, the concept of time lies at the very heart of an understanding of psychiatric disorder. It contributes significantly to emotional maturation[6] and Meerloo[11] has analysed the varying forms of its dysplasia in

most of the major categories of mental illness.

The determinants of time consciousness are obscure and probably diverse. Sex, as we have seen, is one, ontogenesis[2] is a second, Kauder's concept of "temporalization"[3] a third, mood (dramatically illustrated by Binswanger's[1] case history) a fourth, and even economic status[4] has been incriminated as a possible variable. Neurophysiologically, Nielsen and Thompson[13] relate time consciousness with self consciousness and localize it in the anterior thalamic nucleus—cingulate gyrus—orbital convolutions of the frontal cortex system; any interference with this pathway might disturb temporal awareness by removing elements of the feedback mechanisms.[14]

Summary

(1) Awareness of temporal duration was investigated in 347 healthy control subjects and 162 psychiatric and other patients by obtaining from each an estimate of the time involved in performing a 15 sec. task.

(2) It was found that the controls gave mean over-estimates of some 7 secs. and that a significant sex difference existed. Culture, occupation and age (between 17 and 48 years) were insignificant variables.

(3) Patients with migraine gave shorter estimates than the controls; there was no difference between the mean estimates of neurotics and controls; patients with psychopathy, epilepsy, depression, schizophrenia and presenile dementia gave mean estimates of time which were the longer the greater the severity of their mental disturbance.

(4) These findings are discussed.

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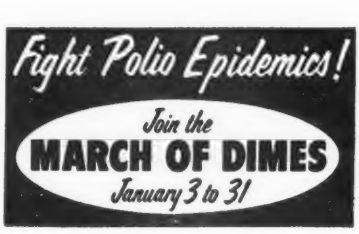

Chlorpromazine in the Management of the Institutionalized Aged Psychiatric Patient With Chronic Brain Syndrome

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Since the early reports of Delay and Deniker[1] and Deschamps[2] on the treatment of psychiatric disorders with chlorpromazine many articles have appeared concerning its effectiveness. Lehmann[3] summarized chlorpromazine's effectiveness as ". . . of unique value in the symptomatic control of almost any kind of severe excitement. This includes catatonic schizophrenia, schizoaffective conditions, epileptic clouded states, agitation occurring in lobotomized patients immediately or several months after surgery and organic-toxic confusional states, as frequently observed in uremic conditions and senile psychoses."

Sainz[4] in a study of 35 senile and 46 arteriosclerotic patients reported chlorpromazine safe and efficient. He found it superior to barbiturates as a sedative since it did not induce confusion. Winkelman[5] who treated 27 agitated senile patients, stressed chlorpromazine's superiority over barbiturates in relieving agitation, belligerence and destructiveness in elderly persons; he attributed this superiority to the drug's ability to calm without depressing. Howell, Horth and Dietrich[6] reported that 18 of 20 patients with senile psychoses became quieter, less agitated and much easier to handle after treatment with chlorpromazine, and we[7] found that it brought about an improved state in 25 of 75 institutionalized psychotics.

Encouraged by our own preliminary investigations and the results reported by other investigators we decided to conduct a controlled study of chlorpromazine in the treatment of chronic brain syndrome.

Method

The study was conducted over a two year period on 52 patients between the ages of 60 and 90, all of whom exhibited, to varying degrees, the basic syndrome of chronic brain disorder: (1) Impairment of orientation; (2) Impairment of intellectual functions (comprehension, calculation, knowledge, learning, etc.); (3) Impairment of memory; (4) Impairment of judgment; (5) Lability and shallowness of affect. This syndrome was associated with psychotic, neurotic or behavioral disturbances of such magnitude that the patient could no longer be managed outside a psychiatric hospital.

Twenty-six of the 52 patients served as a control group. Those patients (all of whom were newly admitted, and previously untreated were treated by standard methods, including EST. They did not receive chlorpromazine.

The other 26 patients were treated with chlorpromazine alone for periods which varied from 15 to 252 days (average 74 days). The daily dose, adjusted to each patient individually, varied from 50 to 400 mgs. (average 150 mgs.). All of these patients had failed to respond to previous therapy. Chlorpromazine was given orally whenever possible, but several uncooperative patients were given their initial doses by intramuscular injection.

The manifestations of the stress these patients were under was indicated by agitation, excitement, irritability, anxiety, confusion and hostility. They were assaultive, resistive, suspicious and dissociated, and displayed negativistic and obsessive-compulsive actions. Many experienced delusions and hallucinations.

Physical infirmity precipitated the state of tension in a great many patients; some traumatic experience, such as the loss of a mate, precipitated it in others.

All patients were severe management problems, noisy and unable to adjust to ward routine. Many required special nursing care because of their inability to feed themselves or to take care of their bowel and bladder functions. Many patients required restraint and heavy sedation.

The response of the patients to the drug was determined by independent clinical eval-

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uations made by this investigator and by the psychiatrist to whose service the patient was assigned. In addition, a weekly summary was made of the observations of the nursing personnel charged with the care of the particular patient. The degree of response was as follows:

(1) *Marked Improvement:* There was a complete reversal of patient's attitude and behavior with an increasing participation in ward activities and interpersonal relations.

(2) *Moderate Improvement:* The patient was less disturbed, more easily managed and began to take some part in hospital activities.

(3) *Minimal Improvement:* The patient seemed less disturbed than usual to the medical and nursing sta who were thoroughly familiar with the pattern of the patient's behavior.

(4) *No Change:* No objective manifestations of behavioral change were observed.

(5) *Worse:* The patient became more disturbed while on chlorpromazine, and improved after it was withdrawn.

Results

Of the 26 patients treated with chlorpromazine six showed marked improvement; six, moderate improvement; five, minimal improvement; three, no change. One patient seemed to become worse. Five deaths occurred in this group. Three were due to cardiac failure; two to generalized arteriosclerosis. None was directly attributable to chlorpromazine.

Five patients, whose medication was withdrawn after they responded to treatment, regressed and were placed on a second course of chlorpromazine. All five responded well to the second course and none has again shown signs of regression, even though chlorpromazine was withdrawn the second time in three of the patients. One of the five patients, after being unsuccessfully treated with EST, responded to chlorpromazine. He started to regress when the drug was withdrawn, became worse when he was given an identical placebo, but he again responded dramatically when chlorpromazine was reinstituted.

Four patients were discharged. One of them stopped taking the medication on leaving the hospital, and was readmitted 2 months later in a state of regression; two were continued on the medication after leaving the hospital and have been able to remain at home; one stopped taking chlorpromazine while in the hospital and was subsequently given 10 electroshock treatments following which she displayed additional improvement and was discharged.

Three patients developed jaundice but in each case the jaundice cleared up when the drug was withdrawn. Only one of the patients who developed jaundice was exposed to a second course of chlorpromazine. During her second course of treatment she did not develop jaundice but did develop an inflammatory swelling about the eyes which was considered to be of an allergic nature. There were two cases of maculopapular rash which cleared even though the drug was continued. One patient developed a Parkinsonian-like reaction.

Of the 26 patients not treated with chlorpromazine (the control group) six died from cardiovascular disease and secondary complications. Only one patient improved sufficiently to be paroled and one is being considered for boarding care. The others have shown very little change.

The case histories recorded below illustrate the varying degrees of patient response evidenced during the course of treatment.

Case 1 (Marked Improvement): This 75-year old male was admitted to the hospital in June 1954, following a course of EST to which he had not responded. He was agitated, restless, incoherent, depressed, delusional, and disoriented. He ate poorly and weighed only 90 pounds. A diagnosis was made of chronic brain syndrome, senile arteriosclerotic type. He was placed on chlorpromazine, 100 mgs. daily, and responded very well. At the end of 40 days of treatment he showed marked improvement and the medication was withdrawn. Gradually, however, he regressed and forty days after chlorpromazine had been withdrawn his condition was such that a second course of treatment was required. This time, in order to test the effectiveness of the active drug, an identical placebo was administered. When the patient showed no response after 10 days on the placebo, 150 mgs. of chlorpromazine daily was prescribed. Response was immediate. As the patient improved the dose was decreased to 50 mgs. daily. At this writing he is being maintained at that dosage. The patient shows marked improvement, displays no agitation and occasionally asks about going home. He spends a great deal of time in bed although he does seem to be interested in group activities and enjoys listening to the other patients' conversations. He is friendly, alert, oriented and responds promptly and coherently to questions.

Case 2 (Moderate Improvement): A 68-year old man was admitted in January, 1955, because of his

insatiable demands for attention and his emotional instability. He had developed a memory loss for recent and remote events and had withdrawn from his associates. He was hostile, jealous and suspicious, and displayed no insight into his condition. A diagnosis was made of chronic brain syndrome associated with senile psychosis.

In February, after showing no improvement on custodial treatment, he was given 8 EST's. He responded well but by March had regressed to his confused state and had to be secluded for his own protection. Chlorpromazine therapy was instituted (300 mgs. daily) and after only two weeks of treatment, at the family's insistence, he was paroled. Chlorpromazine was continued at home and a follow-up call a month later revealed that he was more easily managed than before treatment and not as phobic, although his thinking remained unchanged.

Case 3 (Minimal Improvement). This 63 year old woman had been previously admitted in 1953 but had been discharged against medical advice when the family refused to permit electric shock therapy. In July 1954 she was readmitted in an extremely agitated and fearful state. She spent a great deal of time pacing about in a small circle and would only speak in monosyllables withm much blocking. She was confused, and uncertain of her surroundings.

In August 1954 she was started on chlorpromazine, receiving an average daily dosage of 200 mgs. for a period of 6 weeks. There was only a slight amelioration of her symptoms. In January, because of her continuing agitation and depression the patient was given 10 EST's. Her behavior and attitude improved moderately and she was permitted to go home on visits. The patient did well on these visits and was paroled on January 7, 1955.

Case 4 (No Change): A 75 year old female was admitted in October 1951 because she was restless, confused, disturbed and disoriented. She was unable to concentrate, displayed memory defects, and was unaware of her illness. A diagnosis of chronic brain syndrome associated with senile psychosis was made.

Since her admission to the hospital she had shown a gradual regression with increased confusion and restlessness. She failed to respond to the usual sedatives and became very difficult for the staff to manage. In August 1954 she was put on a course of chlorpromazine. She was maintained on 100 to 400 mgs. daily for eight months. There was no change in her condition. She remained restless, confused and at times had to be spoon-fed. The drug was discontinued when she suffered a mild cerebral vascular accident. Her course to date has remained essentially unchanged.

Case 5 (Worse). A 77 year old woman was admitted in July 1953, five weeks after the death of her husband. She had been treated at home the previous winter for what she cvalled a 'nervous breakdown.' She had difficulty sleeping and was obsessed with the delusion that she was a wicked sinner responsible for the death of several nurses at a Baltimore Hospital. On admission, she was able to care for herself but was somewhat confused, agitated and only partially oriented. Her memory was impaired and her judgment was only fair. Diagnosis was chronic brain syndrome with senile psychosis.

She refused to eat, became undernourished, was noisy at night, confused, resistive and combative. In 1953 she fractured her femur and a year later suffered a colles fracture. By October 1954 she had become a great management problem and required constant restraint. She was started on chlorpromazine and built up to 300 mgs. daily. Treatment was continued for several months without response. There were frequent and prolonged outbursts of yelling, screaming and biting. She developed a ravenous appetite and, although she had to be spoon-fed, would eat two or three trays of food, if permitted, and still yell for more.

On January 21, 1955, she was transferred to the hospital infirmary because blood was noticed in the urine. On February 7, 1955, chlorpromazine was discontinued and on February 9, 1955, an examination under anesthesia revealed a self-inflicted vaginal laceration and an acute cystitis. It was also observed that following cessation of chlorpromazine she seemed less excited and disheveled. Her course continues to go progressively downhill and she has lost almost complete contact with her surroundings.

Discussion

An examination of our results raises the challenging question, "Why did not all the patients respond?" It is our impression, although it is only a clinical one at this time, that the degree of response seems to be related inversely to the degree of organic brain damage. The greater the evidence of brain damage, the less the response.

The relationship between organic brain damage and anxiety is difficult to evaluate, because the usual manifestations of anxiety may be masked by the inability of the patient to communicate his feelings. There were several other observations worth noting. One was that a rise in the patients' weight early in the course of treatment could usually be associated with an ultimate improvement in his clinical state. Another was that the complications which did appear occurred most frequently in older patients, and in those who appeared to have the greatest degree of organic damage.

Summary

To test the effectiveness of chlorpromazine in the treatment of institutionalized aged psychiatric patients a study was conducted

on 52 patients, between the ages of 60 and 90, who were hospitalized with a diagnosis of chronic brain syndrome with either arteriosclerosis, senile psychosis or both. All patients studied were severe management problems. 26 patients received routine treatment including EST; they did not receive chlorpromazine. The other 26 were treated with chlorpromazine alone. The length of treatment varied from 15 to 252 days, the daily dose varied from 50 to 400 mgs. Dosage and method of administration varied depending upon the requirements of the individual patient.

Of the 26 patients treated with chlorpromazine six showed marked improvement; six, moderate improvement; five, minimal improvement; three, no change. One patient seemed to become worse. Five of the chlorpromazine treated patients died during the study, but none of the deaths were directly attributable to the medication. Of the 26 patients in the control group one showed marked improvement; one, minimal improvement; 18, no improvement. Six patients in this group died during the course of the study.

Side effects were noted in seven patients; jaundice in three; rash in three and Parkinsonian-like reactions in one. All side effects were readily controlled.

The results of this study clearly indicate that chlorpromazine is of value for both the treatment and management of institutionalized, aged patients with chronic brain syndrome.

Author's Note: Chlorpromazine used in this study is manufactured by Smith, Kline & French Laboratories under the trade name Thorazine.

Acknowledgment: Through the very helpful cooperation and interest of the late Dr. Ethel Green of our hospital staff, on whose service this study was carried out, and the secretarial assistance rendered by the Volunteer Service of this hospital, this presentation has been possible.

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An Evaluation of the Treatment of Schizophrenia with the Antidiuretic Hormone of the Posterior Pituitary

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Antidiuretic hormone, "Pitressin" (Parke Davis & Co.), has been used in the treatment of schizophrenia by Forizs since 1937. He has described his technique in several communications.[1,2,3]

In essence, the antidiuretic hormone was first used by him in an attempt to produce convulsions by a mechanism of water retention; following the work of Meduna on epilepsy and schizophrenia, the search for convulsant agents was general at that time. The attempt to produce convulsions with the hormone proved abortive but Forizs did notice some symptomatic improvement in his patients.

Pitressin has been used at the State Hos-

TABLE I—PLAIN GROUP

A.S.U.—Acute Schizophrenia, undifferentiated type.
C.S.U.—Chronic " " "
P.S. —Paranoid Schizophrenia.
S.S. —Simple Schizophrenia.
Ca.C. —Catatonic Schizophrenia.

Sex & Age	Duration of Illness	Diagnosis	Treatment	Fate	Length of Stay	Length of Remission
F. 43	2 mos.	A.S.U.	E.C.T.	Discarged Readmitted Redischarged	3 mos.	1 mo.
F. 28	5 days	A.S.U.	E.C.T.	Discharged	3 mos.	23 mos.
F. 47	12 days	A.S.U.	E.C.T.	Discharged	3 mos.	23 mos.
M. 43	6 years	P.S.	E.C.T.	Discharged	12 mos.	13 mos.
F. 62	1½ years	P.S.	E.C.T.	Discharged	8 mos.	17 mos.
F. 45	2 years	C.S.U.	E.C.T.	Discharged Readmitted Redischarged	2 mos.	6 mos.
M. 25	2 years	C.S.U.	CO_2	Discharged	4 mos.	21 mos.
F. 32	4 mos.	P.S.	E.C.T.	Discharged	8 mos.	18 mos.
F. 37	1 year	Ca.S.	E.C.T.	Discharged	7 mos.	21 mos.
M. 36	6 mos.	P.S.	CO_2	Discharged	3 mos.	25 mos.
M. 36	3 mos.	P.S.	E.C.T. Insulin	Discharged	13 mos.	12 mos.
M. 39	2 years	S.S.	None	Discharged	1 mo.	24 mos.
F. 22	1½ years	C.S.U.	CO_2	Discharged	3 mos.	24 mos.
F. 60	5 years	C.S.U.	None	Discharged Readmitted	2 mos.	2 mos.
F. 30	6 mos.	P.S.	None	Discharged	3 mos.	23 mos.
M. 30	4 mos.	P.S.	E.C.T.	Discharged	6 mos.	18 mos.
F. 24	2 years	Ca.S.	E.C.T.	Discharged Readmitted	2 mos.	6 mos.
M. 24	3 years	P.S.	Insulin	Discharged	6 mos.	21 mos.
M. 53	6 yers	P.S.	None	Discharged	4 mos.	24 mos.
M. 34	2 weeks	P.S.	Insulin	Discharged	6 mos.	21 mos.
M. 19	3 days	A.S.U.	None	Discharged	3 mos.	22 mos.

TABLE II—PITRESSIN GROUP

A.S.U.—Acute Schizophrenia, undifferentiated type.
C.S.U.—Chronic " " "
P.S. —Paranoid Schizophrenia.
S.S. —Simple Schizophrenia.
Ca.C. —Catatonic Schizophrenia.

Sex & Age	Duration of Illness	Diagnosis	Treatment	Fate	Length of Stay	Length of Remission
F. 47	4 mos.	P.S.	E.C.T.	Discharged	7 mos.	18 mos.
M. 42	4 years	P.S.	E.C.T.	Discharged	6 mos.	19 mos.
M. 33	3 mos.	P.S.	E.C.T.	Discharged	2 mos.	23 mos.
F. 38	1 year	C.S.U.	E.C.T. Insulin	Not Discharged	27 mos.	—
M. 19	2 mos.	Ca.S.	E.C.T.	Discharged	12 mos.	12 mos.
F. 39	1 week	P.S.	E.C.T.	Not Discharged	28 mos.	—
F. 32	6 weeks	P.S.	E.C.T.	Discharged	5 mos.	20 mos.
M. 24	3 years	P.S.	E.C.T.	Discharged Readmitted	1 mo.	7 mos.
F. 26	1 year	P.S.	E.C.T. Insulin	Not Discharged	27 mos.	—
M. 28	1 year	C.S.U.	E.C.T.	Not Discharged	26 mos.	—
F. 36	3 years	P.S.	E.C.T. Insulin	Discharged Readmitted	6 mos.	4 mos.
F. 38	2 mos.	P.S.	E.C.T. Insulin	Discharged	8 mos.	17 mos.
F. 25	1 mo.	A.S.U.	E.C.T. Insulin	Discharged	12 mos.	13 mos.
F. 35	6 mos.	P.S.	None	Discharged	7 mos.	19 mos.
M. 40	1 mo.	A.S.U.	None	Discharged Readmitted Redischarged	2 mos.	2 mos.
F. 42	6 mos.	S.A.P.	E.C.T.	Discharged	4 mos.	23 mos.
F. 25	2 years	P.S.	None	Discharged Readmitted Redischarged	4 mos.	12 mos.
M. 42	1 mo.	P.S.	E.C.T.	Discharged	24 mos.	2 mos.
F. 36	2 weeks	P.S.	E.C.T.	Discharged	2 mos.	23 mos.
F. 34	6 week	P.S.	E.C.T. Insulin	Discharged	12 mos.	13 mos.

pital at Butner, North Carolina, since 1950, and several hundreds of patients have received courses of injection for periods up to three years' duration.

Since these treatments have nearly always been given in conjunction with the other standard physical therapies, mainly E.C.T. and deep insulin coma, it has been difficult to assess the precise effect of Pitressin.

Forizs[4] has given two main reasons for the administration of Pitressin. Firstly "a phase of reactivation"—by this is meant, a resurgence of the original symptoms of the psychosis may be produced; this phase can now be submitted to E.C.T. or insulin. Secondly, a tendency to stabilize the adjustment of a patient following E.C.T. or insulin coma.

Technique or Treatment

One cc (10 units) of Pitressin is given daily by subcutaneous injection for 10 days, and then thrice weekly for an indefinite period. Should the patient leave the hospital, a letter is sent to his personal physician advising continuation of the treatment.

Courses of E.C.T. and/or deep insulin are given as indicated by the patient's clinical state.

Sources of Material

The subjects of the present study comprise admissions to the hospital between January 1st-April 30th, 1953.

A staff diagnostic conference is held thrice weekly, and is attended by all staff physicians, psychologist, and social worker. Each case is considered for an average of 30 minutes. A social history is available in nearly every case, while psychometric testing, usually Rorschach and Machover figure drawing, is carried out on all patients.

The whole conference proceedings is recorded into the clinical folder, and so the writer has had ample opportunity to check diagnostic criteria and prehospital duration of illness.

It should be noted that the writer has only been a staff member since December 1954 and so has not been concerned in the diagnosis or treatment of any of the subjects considered in this study.

Between January 1st and April 30th 1953, 317 patients were admitted to the Hospital. Of this number 50 were in their first admission to a mental institution and were diagnosed as schizophrenia. It is this group that is presented for detailed study.

Of these patients, six subsequently left against medical advice, one escaped and two were transferred to other hospitals.

Of the remaining 41 cases, 20 received Pitressin, and 21 did not (called hereinafter the "Plain Group").

Table I shows the records of the plain group.

Table II shows the Pitressin group.

Table III is an abstract showing discharge and readmission rates, together with duration of illness, length of stay in hospital and length of remission.

It should be emphasized that the Pitressin group received injections throughout their hospital stay irrespective of what other treatments they were subjected to.

TABLE III

	Plain Group	Pitressin Group
Total Cases	21	20
In Hospital May 1, 1955	2	7
Never Discharged	0	4
Readmissions	4	4
Readmission, Redischarge	2	1
Out of Hospital May 1, 1955	19	13
Initial Discharge Rate	21= 100%	16= 80%
Unbroken Remissions	18= 85.7%	12= 60%
Average Stay	4.8 mos.	7.1 mos.
Average Remission	17.4	14.2
Average Prehospital Duration of Illness	19.4 mos.	10.5 mos.

N.B.—Average stay in Pitressin Group *excludes* never discharged cases.

Composition of the Groups

The ages of the groups show no statistically significant difference (C. R.=0.90).

The average prehospital duration of illness shows a significant difference between the two groups: plain group=19.4 months. Pitressin group=10.5 months Superficially, then, the Pitressin group is the more favorable prognostically, although this is considered again later.

The Pitressin group shows a greater proportion of paranoid schizophrenia than does the plain group; the average prehospital duration of illness in the Pitressin paranoid group is 12.55 months, and 22.5 months in the plain group of paranoids.

Results

As can be seen from Table III, the results in the plain group are somewhat better than those in the Pitressin group. An initial discharge rate of 100% as against 80%, and an unbroken remission rate, measured until May 1st 1955, of 85.7% as against 60%.

The readmission rate in the two groups is practically the same: 19.0% in the plain, and 20% in the Pitressin.

The average stay in the hospital of the plain group is shorter than that of the Pitressin group by 2.3 months, and the average remission is longer by some 3.1 months.

Discussion

It would be unwise, probably, to accept these results at their face value. It should be noted that seven patients in the Pitressin group received courses of deep insulin, while only two in the plain group were so treated. This might be taken to indicate that the cases in the Pitressin group were considered the more severely ill. If these seven patients are excluded from the group, the initial discharge rate rises to 84.6%, and the unbroken remission rate rises to 61.6%, as against 60%.

In this connection it is seen that one patient receiving insulin had a three-year duration of illness, and two others had one year histories. Normally these cases would not be considered favorable ones for this type of treatment. Murdoch[5] has described the treatment of chronic schizophrenia with combined insulin coma and Pitressin, and it is interesting to note that the three-year case did leave hospital after a six months' stay, but was later readmitted.

The question of improvement in the two groups is left unanswered, and probably must remain so, unless an elaborate profile of each patient can be compiled (Hope & Malamud[6]). Such assessments as are made by individual physicians cannot be compared with each other. It is better to rely on discharge and readmission rates, which are at least factual.

It is thought that undue weight should not be placed on the shorter prehospital duration of illness in the Pitressin group; both groups show moderately chronic type of illness, and both show average duration of more than nine months. Probably the prognosis after that period does not markedly vary unless very chronic illness is considered.

Summary

(1) First admissions of schizophrenic patients to the State Hospital have been studied.

(2) The patients have been subdivided into two groups, on the basis of treatment received; one group received Pitressin, one did not.

(3) The groups are comparable for age, but show significant difference in prehospital duration of illness—the Pitressin group has the shorter duration. This has been discussed.

(4) The results have been assessed on the basis of discharge and readmission, length of stay in hospital and length of remission.

(5) The results are significantly better in the group not receiving Pitressin.

(6) It is thought that antidiuretic hormone (Pitressin) is not an effective agent in the treatment of acute and moderately chronic schizophrenic illness.

Author Note: The work reported here was done at the State Hospital at Butner. Permission for publication has been kindly given by Dr. D. Young, General Superintendent of North Carolina Mental Hospitals. The opinions contained herein are those of the author, and do not reäect in any way the opinions of the North Carolina Board of Control.

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Shock Therapy Can Be Safe

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One of the great dilemmas of modern psychiatry is whether to administer electroconvulsive therapy if the resultant convulsion is physically hazardous. Here is a modality which is almost sovereign for depressions. Shall we deny it to patients who, because of heart disease, brittle bones, or other contra-indications cannot be safely thrown into a convulsion?

It must be admitted that electrically induced convulsions *can* cause fractures. Indeed, one report[1] gives the incidence as high as 39 per cent, and others[2] cite such figures as 14, 21 and 23 per cent.

The ideal solution would be to provoke the psychiatrically useful part of the treatment without causing a convulsion. As early as 1940, Bennett[3] suggested curare as a muscle relaxant. Since then, numerous "synthetic curares" have been introduced. They have never become popular. They are slow to act, and once in action, their effect is too prolonged. They are toxic; they produce undesirable histamine-like side-effects.

Thus, only one horn of the dilemma was available: to refuse to give shock. However, in 1952, a new choice was offered: succinyl choline-chloride. In that year, Holmberg and Thesleff[4] reported good results with succinyl choline-chloride, a synthetic substance, which was found to have muscle-relaxant properties by Bovet[5] in 1949. This method has been used by other investigators since, and so far has been proved to be an excellent substance to produce relaxation during E.C.T. without undesirable side-effects.

After observing Dr. Impastato and his coworkers at Bellevue Hospital, we started using succinyl choline-chloride[6] on patients in whom E.C.T. had been considered contraindicated. We have been using the Impastato technique with one minor change. We found it more advantageous to administer 1/75 to 1/100 of a grain of atropine subcutaneously about thirty minutes before the treatment instead of giving it intravenously together with the succinyl choline-chloride and thiopental.[7]

Before the first treatment, patient is tested with 5 milligrams of succinyl choline-chloride intravenously. From the effect of the test dose, the dose for the first treatment is determined. With increasing experience it is possible to predict, with reasonable accuracy, a dose leading to complete relaxation. If a patient feels weak after the test dose; if he is unable to lift his head, we are probably dealing with an "average patient," requiring 10 to 20 milligrams. If he moves freely after the test dose, larger amounts will be required, up to 40 to 60 milligrams and possibly higher. Since the succinyl choline-chloride is rapidly broken down, the first treatment can be administered not later than five minutes after the test dose. The previously determined dose is drawn into a 5 cubic centimeter syringe and 100 to 150 milligrams of thiopental[7] added. The exact dose of thiopental required to prevent unpleasant sensations and produce amnesia has to be determined by trial and error. Then, the content of the syringe is injected intravenously rather rapidly. Between 30 to 60 seconds after the injection, one will notice perioral and periorbital fibrillations. The jaw drops indicating relaxation. At this point, the electric stimulation is given in the regular manner. We have been administering three treatments weekly.

To judge the degree of softening, we use Impastato's method of grading. Thus, we speak of a 4 plus softening when no convulsion takes place; 3 plus when some movement of the extremities occurs, but no force is used to push them down; 2 plus when some force is needed; and 1 plus when a "normal convulsion occurs." At the termination of the softened convulsion, artificial respiration is initiated until the patient starts to breathe spontaneously. This occurs, in most cases, after two to three minutes. For the artificial respiration, we use the M.S.A. Demand Pneophore with good results.

So far, we have treated only few patients, because only those for whom regular E.C.T.

was absolutely contra-indicated were chosen. The results were very gratifying. For example, we had two patients who had been invalids for six and eleven months respectively, and who recovered completely in two to three weeks of "modified" convulsive therapy.

We have had no instances of prolonged apnea. Some of the patients started to breathe spontaneously. None had to be respirated for more than three minutes. Our average dose of succinyl was 24.7 milligrams which is much higher than we expected from Robie's recent report[8] which states that "many such cases require only 5 to 7 milligrams to produce a 4 plus softening convulsion." The lowest dose resulting in a 4 plus convulsion in our series was 15 milligrams. Here are two representative cases:

Case One

A 48 year-old salesman was admitted to a private mental institution in June, 1954, with a diagnosis of Involutional Psychotic Reaction. Symptoms were: depression, agitation, anorexia and inability to concentrate. In January, 1954, he complained of stiffness of his neck, with sharp pains radiating to his right arm. A diagnosis of a "slipped cervical disc" was made, and he was in a cast for six weeks. He had to wear a brace for another six weeks. For that reason, E.C.T. was considered too risky, and he was treated with chlorpromazine and supportive psychotherapy, which resulted in very slight improvement. In October, 1954, he was transferred to Essex County Overbrook Hospital. He had become increasingly confused, depressed and agitated, developed many somatic delusions and was hardly able to walk. Again, regular E.C.T. was considered too dangerous. On March 3, 1955, he was started on E.C.T. modified with succinyl choline-chloride. In view of his past history, we gave him 30 milligrams for his first treatment, and increased the dose later to 40. This resulted in complete relaxation. There were no convulsions visible after application of the electric current. After three treatments, he was already markedly improved. After seven treatments, he was subjectively and objectively completely free of psychotic symptoms. He has been going home on week-end passes and will leave on an extended pass shortly.

Case Two

A 56 year-old female developed a first psychotic episode apparently following a coronary occlusion in November, 1953. She became agitated, depressed and had many somatic complaints. In May, 1954, she started to hallucinate, became delusional and was committed to Essex County Overbrook Hospital. She was diagnosed Involutional Psychotic Reaction. During most of her hospitalization, she was disoriented, depressed, completely out of contact, combative, many times mute and requiring feeding. In view of her past history of rheumatic heart disease, her coronary occlusion in November, 1953, and her present cardiac status with episodes of auricular fibrillation with decompensation, the medical consultant advised against E.C.T. On March 3, she was started on succinyl choline-chloride modified E.C.T. She received 10 milligrams for the first treatment, resulting in only a 2 plus softening. To reach 4 plus softening, the dose was gradually increased to 25 milligrams. She started to improve after the third treatment. By the seventh treatment, she seemed recovered mentally and has maintained her improvement since, despite another episode of fibrillation and cardiac decompensation within about two weeks after her last treatment.

Summary

We have found succinyl choline-chloride a valuable addition to the methods of administering E.C.T. It affords the benefit of this treatment to patients who previously had been considered too great risks for physical reasons. In our series, the average dose to produce complete relaxation was 25 milligrams. Two cases of Involutional Psychotic Reaction, who recovered completely under this treatment, are described.

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Irony, Invective and Satire in Developing Social Skills

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Man's survival through the ages of history is somewhat surprising when one reads the story. There were wars which swept over the face of the Earth without any regard for the feelings, the possessions, or even the life of the common man. "Man's inhumanity to man"[1] makes one wonder how man not only lived, but when he did live, how he maintained his sanity. The cruelties exercised in the name of religion and justice, the rack, the thumbscrew, and other forms of torture, all undoubtedly brought to many an individual more than he could bear. Nevertheless, throughout the ages man survived. There were men of Egypt, Greece, Rome, in the middle ages, and even during the rigors of American frontier life, who lived, maintained their sanity and reached a certain degree of maturity. Even today, in the face of cold wars, subversive activities, general suspicion and threats of atomic war, people do escape mental disease, develop mature attitudes toward living, and enjoy a modicum of happiness.

Maturity and sanity are the products of social learning. The learning of social skills which enables one to get along in this world of tears and agony, to stand bitter loss and desperate dread, is a type of education required of those who survive to reach that certain degree of flexibility in response, which we call maturity. There must be then, certain human characteristics that have nurtured man's ability to learn the necessary skills to face the tragedy of it all and to take it. The ability to pray, to project his needs and wants into the great unknown and to feel some security from his projection, has certainly been a valuable human trait. The ability to believe himself inviolate and immune, regardless how imminent the disaster, and to block out what is past so as to start anew, has undoubtedly helped to preserve mankind in stress. But the greatest of all is the power which allows man to discharge that which is repressed, to escape from surrounding tragedy, and to remove the hurt from the pain; e.g. the ability to laugh, to see the comic, and to enjoy the joke even at his own expense. It has been said that ability to forget the past, to laugh at the present, and to hope for the future, is a necessity for mature man.[2]

Aristotle studied laughter, Erasmus wrote the *Praise of Folly,* Hobbes held that awkwardness or other deformity or imperfection in others makes one laugh because it heightens one's self esteem and so pleases him.[3] Schopenhauer found the cause for laughter in the sudden incongruity that is presented.[4] Freud felt that many of the techniques used in dreams were used in wit and humor, that repressed hostility, sexual desire, as well as wishes, could find outlet through wit and humor. He mentioned the reduction of pain by humor, as well as the relationship of the understanding of wit to social learning. A certain amount of energy holds tabooed drives repressed. Wit allows the discharge of this energy in an economical fashion. This discharge brings the laughter with its accompanying relief.[5] Bergson believes that where automatic or mechanistic behavior takes the place of more flexible behavior, the comic sensation arises. The absentminded professor and the clown use this same sort of behavior to produce laughter. The clown and the professor act in automatic fashion, as if they were entirely unaware of the laughter they are producing.

Bergson also feels that laughter is a shared emotion. You have to belong, to laugh with a group and if you do laugh you are one of the gang. He thinks laughter is a kind of social rigging, a method of breaking-in people to the forms and conventions of society, a way of curing eccentricity and unsociability in their early stages. "Society senses in the early stages a deficiency, in either elasticity or tension, feels threatened by it, and attempts to remove the threat by means of a gesture. This gesture is laughter."[6]

As nations become more civilized, their comedy shades from the crude and very direct to the more indirect and subtle. The

horseplay, the low comedy in Shakespeare's plays is for the low person in the pit, the subtle wit for the elite on the stage. The Greeks, at the height of their civilization, were masters of irony, while the Romans developed satire and the French a scathing wit. The English, more than any other, have the highest sense of humor. A quiet sense of one's own ridiculousness which may or may not be shared to be enjoyed, is the most adult and also the most civilized of all comic effects.

Invective is the most direct verbal attack. By this means one person assaults another person or a thing which he personifies. There are two persons involved: the aggressor who carries the responsibility of the assault, and the recipient who feels the impact. If direct assault is too dangerous, however, because of the possible retaliation by the recipient or his friends on one hand, or because the guilt of the aggressor felt during the assault or as an after-reaction is too hard to bear, a twist is given to the attack by the use of language. The attack becomes indirect and a third individual enters the picture. This third person is the spectator. His presence changes the whole situation, since he is a witness to the fact that no direct assault was intended. The presence of this spectator is essential to all kinds of wit except rare types of personal humor. The spectator must be in rapport with the joke teller, teaser, or the wit. He is "in the know" to use the vernacular and shares with the teller the fun derived from the witty assault. He must get a similar energy discharge, as does the teller, if the whole proceeding meets with success. If he is not in the mood, if he has heard it before, and does not laugh in the proper fashion, the joke teller is left "high and dry" with an uncomfortable feeling of inadequate discharge similar in feeling at least, to an incomplete orgasm.

The object of ridicule on the other hand, has another role. He must act like the clown in the comedy who pretends to be unaware of his ridiculous behavior. He must not show that he feels the barb and is seriously hurt, but must smile sweetly and act in a bland manner, as if he were not aware of anything but kindness on the part of the aggressor. He may retaliate by a witty quip or even turn the tables by a more clever witticism. Rage, tears, or direct attack of any kind is not playing the game. The poor fellow who shows he can't take it is excluded from the elect group of those who laugh. The pleasure of the aggressor when the joke is laden with hostility certainly has an element of sadism; when the joke has a sexual import the pleasure is similar to that of the exhibitionist, since the teller shocks an audience by suddenly revealing in an unaccustomed place, the forbidden sexual words. The pleasure of the spectator is similar to that of the teller. His response varies with the degree of skill used by the operator in building up the story to produce a startling and unexpected exposure. The pleasure of the one who is the object, is masochistic in some degree—a feeling of pleasure from being beaten on. There is also some pride in the fact that he controls himself and is able to play the game according to the rules.

Now to point out how these forms of the comic, invective, irony and other forms of wit have social value. This value is shown in the relief afforded in four areas. First, to relieve the strain arising from the need of keeping repressed crtain drives such as hostility, sexual desire, and such tender sentiments as admiration, kindness and love, when their direct expression is impossible without embarrassment. For example, a marine who admires his buddy's new uniform says, "Where did you get that goddam fancy rig?" Second, there is the need to lessen the pain that arises from either the present or the past. The comic twist enables us to endure the unbearable. Third, there are the inconsistencies of life that are so hard to understand. The duplicities of human behavior are especially dismaying to the child who in the beginning is naive, direct, and lives in a world of simple honesty. The indirection used in increasing complexity, as one goes from invective to more complicated joking, teaches the child to joke, the use of deception and the rules that govern the behavior of those who laugh and those who are the object of ridicule. Finally, there is a fourth value to the comic. In this way he can be accepted into a group of laughers who enjoy the antics of the clown, that outsider who is apparently unaware of the amusing

nature of his behavior. This camaraderie of laughers carries with it the security that comes from belonging, but also the terrible insecurity and lonesomeness of those who are excluded because they cannot enjoy a joke or cannot "take it," according to the rules, when they are attacked in "so-called" humorous vein.

The Relief of the Repressed

The direct assault brings the greatest relief of repressed material. Undoubtedly a good "goddam you" when expressed to one who is hated gives great relief. I imagine "rape" also has its sexual value. Yet these direct methods call for such severe retaliation that they can't be used except by soldiers during war or professionals in the boxing ring. Invective can be used if a slight twist is given which then slides it over into the great area of the comic. Walter Winchell and Arthur Godfrey play along this dangerous edge daily. The more indirect the attack, the less responsible the attacker, the less guilt he carries for the assault, also the more helpless the victim to retaliate without acting the fool.

The book of Job is a good example of the use of invective to give vent to man's feeling regarding the problem of good and evil and the omnipotence of God.

"Let the day perish wherein I was born, and the night in which it was said, there is a manchild conceived.

"Let them curse it that curse that day, who are ready to raise up their mourning.

"Because it shut not up the door of my mother's womb nor hid sorrow from mine eyes."[7]

It is interesting that God is allowed to defend himself in the true joking mode by crushing sarcasms.

"Canst thou draw leviathan with a hook?—Wilt thou play with him as a bird?—or wilt thou bind him for they maidens?"

Mark Twain in his later years became quite bitter. He considered that he was only a thought between two eternities. He expresses his feeling regarding the religious thinking of his day by putting the words in the mouth of the devil who has visited this earth as The Mysterious Stranger. Satan says to man as he leaves,

"Strange! that you should not have suspected years ago—centuries, ages, eons ago! for you have existed companionless through all the eternities. Strange indeed, that you should not have suspected that your universe and its contents were only dreams, visions, fictions! Strange because they are so frankly and hysterically insane like all dreams: A God who could make good children as easily as bad, yet preferred to make bad ones; who could have made everyone of them happy, yet never made a single happy one; who made them prize their bitter life, yet stingily cut it short; who gave his angels eternal happiness unearned yet required his other children to earn it; who gave his angels painless lives, yet cursed his other children with biting miseries and maladies of mind and body; who mouths justice and invented hell—mouths Golden Rules, and forgiveness multiplied by seventy times seven, and invented Hell; who mouths morals to other people and has none himself; who frowns on crimes yet commits them all; who created man without invitation, then tries to shuffle the responsibilities for man's actions upon man, instead of honorably placing it where it belongs, upon himself; and finally with altogether divine obtuseness, invites this poor abused slave to worship him!"[8]

This is said by David Worcester to be "the most conspicuous God-baiting in American letters."[9] Certainly it enabled its author to relieve many of his repressed emotions, and has a similar effect on many who read it.

The "dirty" joke also releases repressed drives. Sometimes hostility is expressed when the joke has very little indirection but depends on the shocking expression of forbidden ideas for its acceptance. Such jokes are called filthy by most people of culture who prefer to relieve their guilt for using tabooed words and thoughts by more indirection. Filthy jokes usually have to do with excreta and are similar to feces smearing that we all enjoyed as infants. The child under four enjoys a similar sort of direct attack. The child will say "you are doody" or "pee-pee on you" and consider it funny. The limerick is more acceptable to adults because the rhyme forces the teller to pronounce the obscene thought, thus his guilt is allayed by the rhyme and the indirection of the play on words. For example,

> On the breast of a lady named Hale
> Was tattooed the price of her tail
> And on her behind
> For the sake of the blind
> The price was imprinted in braille.

Thus the word "Hale" forces the rhymer to use the tabooed words.

Nevertheless the value of the sexual joke is mainly that of exhibitionism. It is interesting how such tellers have a preference for

exhibiting anal, oral or genital drives. The taboo is lifted and they demonstrate frequently their areas of chief concern; heterosexuality, homosexuality or auto eroticism. Perhaps the greatest pleasure exists when the taboo is lifted in the presence of a parent or some other authoritarian figures such as a teacher in school or "the boss" in industry, thus giving the added joy of shocking the father figure and in showing one's revolt against his dominance.

Tender sentiments are very difficult for some men to express, especially to other men. Those so handicapped in direct expression will therefore use invective. This assault is really a burlesque, either low or high. The first, the high burlesque, is done by overpraising in obviously exaggerated form such as "you are the best goddam guy in the whole United States" or in low burlesque, when he says as he meets a friend, "Hello, you damn little bastard, I thought you were dead." Each exaggeration is understood and valued by the friend being greeted according to the friend's social skill.

Husbands frequently belittle their wives in this fashion. Often they cannot express their true sentiments and use what to them seems obvious false and exaggerated belittlement, which should indicate their true feelings of approval. Yet the wife on the other hand, who has not similar training is often seriously injured by her literal translation of the remark.

The Relief of Pain

In the relief of pain the comic has its highest function. This relief is often temporary, but it enables even the most cowardly, the most desperate, and the most tortured to take heart and hold on. The patrol leader who leads his group into almost certain death says, "Come on, you bastards, do you want to live forever?" The negro on the scaffold just before he is hung says, "Well, this is going to be a lesson to me." I asked an Irishwoman why she stayed with her husband who continued to beat her. "Oh!" she said, "doctor, he hits such a beautiful blow!" The other day, a patient whom I had treated for hypochondriasis, was in an oxygen tent because of severe pneumonia. Previously he had complained of shortness of breath when there was no evidence of any difficulty, but now he was dying from increasing inability to breathe. He looked at me with a smile, "Don't worry, Doc," he said, "it is all a figment of the imagination." In a few hours he was dead.

This ability to see the comic in the most painful situation is a very high quality. Freud speaks of this as a sense of humor. It is an ability to detach oneself from himself to be able to enjoy the ridiculous nature of one's own predicament. This sense may be shared with another who has developed a similar skill, but is perhaps more sacred when enjoyed secretly.

Relief Through Understanding of Duplicity

Interpersonal relations regardless of the culture, calls for a certain amount of double dealing. The understanding of this behavior duplicity is essential to successful maturing. The Balinese use teasing as a method of teaching their children how to avoid frustration.[10] The Arapesh use the same techniques to produce a non-aggressive culture.[11] In the deep South the young negro is trained by means of a game called "joaning" or "dozens" to take all the epithets and injustices that he will meet later in adult life. In this game he is subjected to all kinds of verbal attack. All the assaults that can be imagined are directed at him, yet he must not cry, run away or show rage. His reply must be verbal, no physical assault is allowed, or he fails in the test and is excluded from the group.[12] This is very much the same situation that occurs in our culture when we are being kidded by our friends. They use wit of a dubious nature, often invective, and sometimes direct insult to rib us, yet we are supposed to take it with a smile; if we do not we are put among those that cannot take a joke. Teasing has both sadistic and masochistic values for the teaser and teasee. It is used by children to relieve the jealousy of sibling rivalry and by the juvenile lad who cannot begin to court his girl, so teases her unmercifully.[13] Teasing and joking are also used in teaching social skills, and the child grows up he develops a joke facade which becomes more complex as he becomes more skillful and hides more deeply true feelings. The ability to penetrate this facade so as to understand the hidden meaning, parallels this developing complexity to

allow the child not only to understand the joke, but also the mysteries of adult behavior. Martha Wolfenstein in her recent book, *Children's Humor,* has developed this theme in splendid fashion.

First the child uses the direct assault, then slightly more indirection. The moron joke is used to show the child's smartness and the adult's dumbness, especially since most children think of the moron as someone about 40. Next comes the rhyming joke, then the anecdote, then the nonsense joke, which develops from the shaggy dog type to jokes which have no sense at all. Finally there is the appreciation of the most subtle witticisms as the child becomes an adult. The vague skill known as the sense of humor is probably the last to appear. There is a tremendous difference among children in regard to their ability to tell jokes and to appreciate their meanings.[14] This ability could well be used as a test to gauge the person's advancement in the learning of social skills on which depend his success in relationship to other persons. Arieti states that the person who develops schizophrenia is one who has not learned to take a joke.[15] A test of the ability to understand and take a joke might allow us to recognize this potentially sick individual at a very early stage in his development.

Relief of Loneliness

John Donne says "no man is an island"[16] but nevertheless we do live in our own little worlds. If these small worlds are not shared by other humans then other techniques such as fantasy are brought into play, which may lead on to exaggerations that produce disease. Often when we bring patients before a group of students we caution the students not to laugh at the patient, but state that laughing with the patient is perfectly proper. A small patient of eight was brought before the group. She had on a pretty new dress; she preened, and cavorted in a fashion to show her new clothes. The exhibitionism was so obvious and so natural yet so coy, that we all laughed. The child laughed happily, apparently very much aware of what was going on and enjoying it. Yet her history showed that only a few days before she had worn her new clothes to school. There she was laughed at by the other children in the mountain community because of her "store boughten" clothes. She cried, ran home and refused to return to school. The laughter in the first instance accepted her, while the laughter in the second excluded her. It was not the fact that they laughed at her clothes, which she knew were beautiful, but the fact that the group cast her out that broke her heart.

Arieti points out that there is a need for security peculiar to the human being. He develops the theme that a lack of security arises in man starting about the second year of life, due to his ability to prospect the future. The need for a feeling of security is met by developing a self image which in turn is dependent on the knowledge that he is recognized and accepted as an individual in his own right.[17] If one is accepted among those who laugh or even among those who are laughed with, there is engendered a feeling of belonging which brings security. On the other hand, if one is that poor excluded being who is being laughed at, his fate is terrible. He can escape, however, by assuming the role of the clown. The clown acts the role of one who is unconcerned and unaware of the ridicule heaped upon him, yet is known by all to actually provoke it and to enjoy it secretly. The clown however, is often pictured as a lonesome fellow who when out of his role has no social skills, hence is unable to enjoy ordinary living, thus the song, Laugh, Clown, Laugh.

To conclude, there is among us too little appreciation of the value of laughter. Man's ability to make a joke, to poke fun, or to retire into quiet humor has been one of the most potent forces in the development and preservation of mankind. Without this ability to offset the tendency to take himself seriously and to work so hard to complicate the business of living, man could not have survived with any degree of sanity and certainly could not have reached that state of flexibility characteristic of the mature man. The joking ability allows him to release repressed drives which might otherwise destroy him, lessens pain when it becomes unbearable, trains him in the understanding of duplicities which are required by peaceful community living, and finally gives him that

feeling of friendly acceptance which is essential to all human beings.

Laugh, and be merry, remember, better the world with a song
Better the world with a blow in teeth of a wrong.
Laugh, for the time is brief, a thread the length of a span.
Laugh and be proud to belong to the old proud pageant of man.[8]

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Book Review

TEXTBOOK OF OCCUPATIONAL THERAPY by Eamon N. M. O'Sullivan. Philosophical Library, Inc., New York, 1955, p. 319. $10.00.

This volume should prove of assistance to anyone who supervises, oversees or helps with an occupational therapy program. It is a comparatively brief presentation when one considers the large field which it concerns. Nevertheless, it is clearly and interestingly done and technically one could have no quarrel with the way in which the subject matter is presented.

The author has carefully correlated his material in order to answer the questions of those who would like information on a subject, in which the material has been sparse. Also one is moved to comment on the fact that not sufficient advantage is taken of the help that can be given by occupational therapy and not sufficient knowledge is spread broadcast on its real therapeutic efficacy. After all, the physician sees the patient in a hospital for only a relatively short period of time. The remainder of the time is spent with nurses and occupational therapists and one need not draw pictures to demonstrate the importance of these various auxiliary services.

Though this book has been written with its most pointed reference to psychiatry, particularly to state hospital psychiatry, the writer has laid down some basic principles, rules and objectives that may be applied to any occupational therapy department. Actually, one can consider it a blueprint of an approach to the work of the therapist in the rehabilitation and reeducational program. It is particularly recommended to occupational therapy students and especially those who intend to choose psychiatry for the field of their endeavors, but the physician who wishes to make the most of his occupational therapy program would do well to read it.

Francis J. Braceland, M.D.

BOOKS RECEIVED

For readers' attention, books received are descriptively identified. Selected reviews appear in BOOK REVIEW section as space and interest permit.

BIOCHEMISTRY AND THE CENTRAL NERVOUS SYSTäM by Henry McIlwain, Ph.D., D.Sc., Prof. of Biochemistry University of London, Institute of Psychiatry. Cloth. $9.50. Pp. 272 with 43 illustrations and 33 tables. Little, Brown and Company, Boston, Mass., 1955.

PRACTICAL NEUROLOGY by Leo M. Davidoff, M.D., Prof. and Chairman, Dept. of Surgery of the Albert Einstein College of Medicine, and Emanuel H. Feiring, M.D., Associate Prof. of Surgery (Neurosurgery), Albert Einstein College of Medicine. Cloth. $7.00. Pp. 442. McGraw-Hill Book Co., Inc., 330 West 42nd Street, New York, N. Y., 1955.

LIFE STRESS AND ESSENTIAL HYPERTENSION by Stewart Wolf, M.D., Prof. and Head, Dept. of Medicine, University of Oklahoma School of Medicine, et al. Cloth. $7.50. Pp. 253. The Williams and Wilkins Co., Baltimore 2, Maryland, 1955.

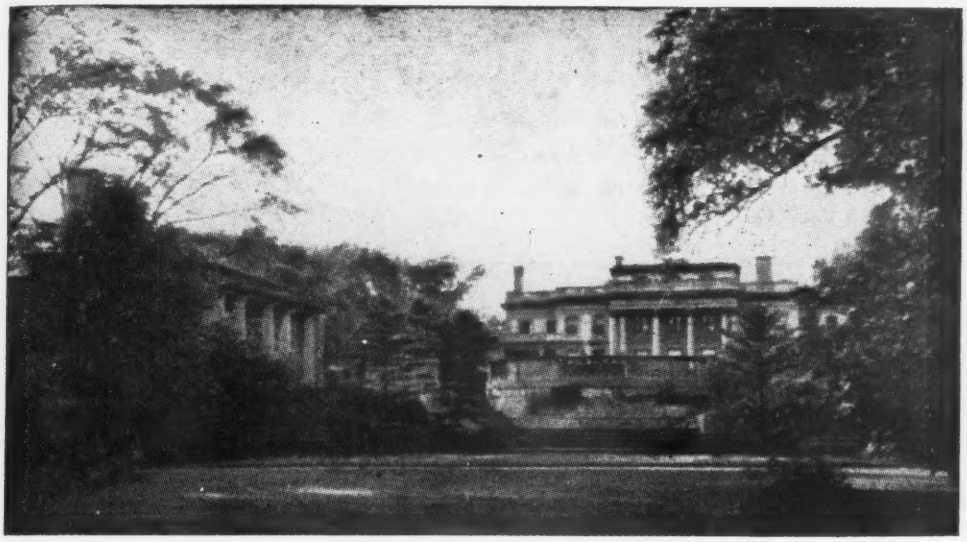
COMMUNITY PROGRAMS FOR MENTAL HEALTH by Ruth Kotinsky and Helen L. Witmer, Editors. Cloth. $5.00. Pp. 362. Harvard University Press, Cambridge, Mass., 1955.

INDEX 1955 — Volume XVI

Diseases of the Nervous System

	Month	Page
ANTICIPATION OF PUNISHMENT *Edmund Bergler*	January	22
ANTIDIURETIC HORMONE OF POSTERIOR PITUITARY IN SCHIZOPHRENIA *G. F. Westcott*	December	369
ALCOHOLICS—ESTABLISHMENT OF TREATMENT UNIT *Kenneth A. Ritter*	June	185
BRAIN TUMORS (METASTATIC) *K. M. Earle*	March	86
CARBON DIOXIDE INHALATION THERAPY—FOLLOW-UP STUDY *Werner Simon, Harold Gilberstadt and Evelyn Neilson*	May	149
CHLORPROMAZINE IN CONJUNCTION WITH OTHER PSYCHIATRIC THERAPIES *Hamilton Ford and Grace K. Jameson*	June	179
CHLORPROMAZINE IN AGED PATIENT *Albert A. Kurland*	December	366
CHLORPROMAZINE IN LARGE DOSES FOR PSYCHIATRIC PATIENTS *Frank J. Ayd, Jr.*	May	146
CHLORPROMAZINE IN WITHDRAWAL OF HABIT FORMING DRUGS *G. H. Aivazian*	February	57
CHLORPROMAZINE THERAPY—PROTEIN PROFILE *G. Trigos and W. McCullough*	October	309
CHLORPROMAZINE TREATMENT COMPLICATIONS *Vernon Kinross-Wright*	April	114
COMMUNITY SERVICES PROGRAM *Joan Fell Lauber*	August	242
CONDUCT PROBLEMS IN CHILDREN AND HYPNOSIS *Galina Solovey de Milechnin*	August	249
DEFENSE AND COMMUNICATION IN THE LANGUAGE OF SCHIZOPHRENIA *Irving M. Rosen*	October	315
DOCTOR-PATIENT RELATIONSHIP IN MILITARY PSYCHIATRY *A. Leonard Abrams*	April	111
DRUGS AFFECTING PSYCHOTIC BEHAVIOR AND MESODIENCEPHALIC ACTIVATING SYSTEM *Franco Rinaldi and Harold E. Himwich*	May	133
ELECTRO-CONVULSIVE THERAPY WITH UNIDIRECTIONAL CURRENT *S. P. Alexander*	March	72
ELECTROENCEPHALOGRAPHIC CHANGES DUE TO ELECTROTHERAPY *Maurice Klotz*	April	120
ELECTROENCEPHALOGRAPHIC EXAMINATIONS *Leslie J. Seeley*	December	355
ELECTROSHOCK MODIFICATION WITH SUCCINYLCHOLINE *H. Jerome Reitman and Enrique Delgado*	August	237
ELECTROSHOCK THERAPY—MODIFICATION BY SUCCINYLCHOLINE CHLORIDE *Charles Saltzman, William Konikov and Ruth P. Relyea*	May	153
EXPERIMENTAL PSYCHIATRY *Max Rinkel, Robert W. Hyde, Harry C. Solomon*	August	229
FAMILY INFLUENCES IN TREATMENT OF MENTALLY-ILL PATIENTS AT HOME *Newman Cohen and David D. Clancy*	September	263
FRENQUEL IN SCHIZOPHRENIC PSYCHOSES *Howard D. Fabing and J. Robert Hawkins*	November	329
GROUP PSYCHOTHERAPY FOR MENTAL HOSPITAL *J. W. Klapman*	January	24
HYDROGENATED ALKALOIDS OF ERGOT IN MENTAL DISORDERS *Leo E. Hollister*	September	259
HYPEREMESIS GRAVIDARUM *Ewald W. Busse*	February	47
HYPNOANALYTIC ELUCIDATION OF MOTIVATION AND GOAL *Jerome M. Schneck*	June	173
INSPIRATION AND METHOD IN SCHIZOPHRENIA RESEARCH *Humphry Osmond*	April	101
INSULIN SUB-COMA AND GROUP THERAPY IN MENTAL HYGIENE CLINIC *Joseph L. Bell and Gordon J. Barnett*	March	80
IRONY, INVECTIVE AND SATIRE IN DEVELOPING SOCIAL SKILLS *David C. Wilson*	December	375
LOBOTOMIZED PATIENTS—REHABILITATION AND ETHICAL VALUES *Arnold W. Schmidt*	July	195
MEDICAL SCHOOL ROLE IN PSYCHIATRY *E. Ivan Bruce*	February	61

	Month	Page
MENTAL DISORDERS AND THYROTOXICOSIS *Jaime Quintanilla*	October	312
MENTAL RETARDATION—CHANGING ATTITUDE TOWARD *Hans Meyer*	November	345
MERATRAN AND ELECTROSHOCK IN TREATMENT OF DEPRESSION *Henry E. Andren*	September	275
MERATRAN—CLINICAL EXPERIENCE WITH *Howard D. Fabing*	January	10
MERATRAN *Leon Oettinger, Jr.*	October	299
METRAZOL THERAPY IN SENILITY *William G. Suter*	July	211
MONOPOLAR ELECTROSHOCK THERAPY *Joseph Epstein*	October	303
NEUROTIC'S SUSCEPTIBILITY TO TRAUMA *Eugene C. McDanald*	July	218
NICOTINIC ACID THERAPY IN THE CHRONIC SCHIZOPHRENIC *P. O. O'Reilly*	March	67
OCCUPATINAL NEUROSES *John W. Bick, Jr.*	January	18
ORIENTING THERAPY TO PURPOSE *David C. Wilson*	May	142
PERIPHERAL ELECTRICAL STIMULATION *C. H. Jones, J. G. Shanklin, H. H. Dixon, J. M. Brookhart and P. H. Blanchly*	November	323
PHILADELPHIA NEUROLOGICAL SOCIETY *Charles Rupp*	August	247
PHYSIOLOGY OF AWARENESS *John W. Lovett Doust*	December	363
PLEXONAL IN TREATMENT OF ANXIETY AND INSOMNIA *Leon M. Simms*	February	54
PREGNENOLONE METHYL ETHER FOR PSYCHIATRIC SYMPTOMS *Harold G. Sleeper*	March	93
PRIMIDONE (MYSOLINE)—EFFECT ON GRAND MAL ATTACKS *G. De M. Rudolf*	July	204
PSEUDO-NAIVETE DISPLAYED *Edmund Bergler*	November	343
PSYCHIATRIC CHRONOLOG *Emanuel Messenger*	September	270
PSYCHIATRIC DIAGNOSIS: FACTUAL OR SYMBOLIC *Charles Watkins*	February	51
PSYCHIATRIC FLOOR IN A GENERAL HOSPITAL *John A. Ritchie*	January	15
PSYCHIATRIC INTERVIEW *Alberto DiMascio, Richard W. Boyd, Milton Greenblatt and Harry C. Solomon*	January	4
PSYCHIC MASOCHISTS *Edmund Bergler*	June	187
PSYCHOLOGICAL ISSUES AND PHYSICAL TREATMENT *Leo Alexander and Irving M. Rosen*	August	232
PSYCHOLOGICAL CHANGES DURING EXPERIMENTAL SLEEP DEPRIVATION *David B. Tyler*	October	293
PSEUDOHERMAPHRODITISM: A PSYCHOLOGICAL STUDY *Wilson G. Scanlon*	July	207
PSYCHOTHERAPY—SPECIAL TECHNIQUES *Harry L. MacKinnon and Arnold Allen*	September	277
PSYCHOSOMATIC INVESTIGATIONS OF CEREBRAL ARTERIOSCLEROSIS *E. Adams Daneman, George Chornesky and James A. Haycox*	June	165
RAUDIXIN AND RAU-SED IN CHRONIC MENTAL ILLNESS *Earl K. Holt*	July	222
RESERPINE (SERPASIL) IN PSYCHOTIC PATIENTS *James Weishaus*	November	347
RETROCOLLIS—PSYCHODYNAMICS IN A CASE *J. Mendelson*	November	339
SERPASIL—USE ON A DISTURBED WARD *Harry Adler*	April	122
SHOCK THERAPY CAN BE SAFE *Felix A. Ucko*	December	373
SUICIDE—THREAT OF *Lewis J. Siegal and Jacob H. Friedman*	February	37
TENSION HEADACHES AND THEIR TREATMENT *Milton H. Kibbe*	March	77
THERAPY: A PROPOSED OBJECTIVE EVALUATION *P. O. O'Reilly*	September	266



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Composition: Each tablet contains extract of rhubarb, senna, precipitated sulfur, peppermint oil and fennel oil, in an activated charcoal base.
Action and Uses: Mild laxative, adsorbent, carminative and a purifier. For use in indigestion, hyperacidity, bloating and flatulence.
An excellent detoxifying substance with a wide range of uses in dermatology.
Administration: 1 or 2 tablets daily ½ hr. after meals.
SUPPLY: Tins of 100.

SEDATIVE AND EUPHORIA FOR NERVOUS, IRRITABLE PATIENTS

VALERIANETS-DISPERT®

TASTELESS, ODORLESS, NON-DEPRESSANT SEDATIVE & EUPHORIC

Each Chocolate Coated Tablet Contains Ext. Valerian (highly concentrated) 0.05 Gm. dispergentized finely subdivided for maximum efficiency.

Indicated in cases of nervous excitement and exhaustion, anxiety and depressive states, cardiac and gastrointestinal neuroses, menopausal and menstrual molimena, insomnia.

Dose: 1 or 2 tablets t.i.d. supply Bottles of 50, 100, 500 tablets.

A MODERNIZED METHOD FOR PREPARING BUROW'S SOLUTION U.S.P.

PRESTO-BORO®

In Tablets or Powder in envelopes (ALUMINUM SULFATE and CALCIUM ACETATE)

FOR USE AS AN ASTRINGENT and TOPICAL DRESSING

(U.S. Pat.)

Dissolve in plain water as directed for preparing astringent Burow's Solution for treatment of Swellings, Inflammations, Sprains. Antipruritic, decongestive action. Accurate uniform dosage. Stable, Lead free.

FOR PULMONARY CONDITIONS

®TRANSPULMIN

3% solution Quinine with 2½% Camphor for Intramuscular Injection

AVAILABLE AT ALL PHARMACIES

STANDARD PHARMACEUTICAL CO., INC., 253 W. 26th ST., NEW YORK

SANITARIA DIRECTORY

The institutions listed below are among the finest private sanitaria in the United States. They offer private, individual specialized care to the patient.

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NEW

for MIGRAINE complicated by
–Nervous Tension
–G.I. Disturbances

CAFERGOT-PB®
SUPPOSITORY

Ergotamine tartrate	*2 mg.*
Caffeine	*100 mg.*
Bellafoline	*0.25 mg.*
Pentobarbital Sod.	*60 mg.*

Average Dose: 1 suppository at onset of attack; second after 1 hr., if necessary.

SANDOZ *Sandoz*
PHARMACEUTICALS
HANOVER, N. J.

8139